

**BY ORDER OF THE COMMANDER
374TH AIRLIFT WING**

374th Airlift Wing INSTRUCTION 21-102

17 NOVEMBER 2011



Maintenance

**HANDLING C-130 CHAFF/
FLARELOADED AIRCRAFT**

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This instruction establishes specific guidelines for 374th Airlift Wing (374 AW) C-130 aircraft configured with chaff/flare munitions for Aircraft Defensive Systems (ADS). These systems use Hazard Class/Division 1.3. and 1.4., explosives, which require special handling and coordination. The following procedures must be accomplished to ensure explosives are handled safely and expeditiously while on Yokota Air Base (AB) or at a deployed location. All personnel working around explosives-loaded aircraft must be trained and familiar with the hazards involved. They will also ensure explosives operations expose a minimum number of people to minimum amount of explosives for a minimum amount of time. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and dispose of IAW the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afirms/afirms/afirms/rims.cfm>. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through their appropriate functional chain of command. Commanders and supervisors will ensure all personnel comply with this instruction.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Major changes include: extensive additions to documentation procedures directed in paragraph 7.

1. General Policy and Responsibility

1.1. Explosives safety standards are an extension of the will of CONGRESS and have the power of law. Explosives safety policy is established through Department of Defense Directive (DODD) 6055.9E, *Explosives Safety Management and the DoD Explosives Safety Board*.

1.2. The Air Force provides explosives safety guidance in AFMAN 91-201, *Explosives Safety standards*. This manual is an extension of DODD 6055.9E, and provides further guidance for Air Force specific explosive safety issues.

1.3. The 374th Maintenance Group Commander (374 MXG/CC) is responsible for ensuring all known rules are followed within his/her command. The 374 MXG/MXQ assists him/her in these endeavors and must ensure compliance with all known explosives safety technical orders, directives and standards.

2. Mishap Notification and Emergency Actions

2.1. When a mishap occurs, involving explosives:

2.1.1. Immediately notify the Maintenance Operations Center (MOC), which in turn follows the emergency action checklist.

2.1.2. All nonessential personnel will be withdrawn to the minimum distance required for the greatest munitions hazard present.

Table 1. ADS Explosive Payload Limits per Aircraft

Nomenclature	Hazard Class/Division	Fire Symbol	Withdrawal Distance
M-206 Flare	1.3/G	3	600 ft.
MJU-50 Flare	1.3/G	3	600 ft.
M-211 Flare	1.3/G	3	600 ft.
RR-170 Chaff	1.4/S	4	300 ft.
RR-188 Chaff	1.4/S	4	300 ft.

NOTE: Warning: If fire is involved, do not use Halon, carbon dioxide or water fire extinguishers on or near flares. Breathing apparatus is required for fire fighting personnel. These extinguishers may be used on surrounding areas. Attempt to fight fire only if explosives are not directly involved.

3. Procedures for Chaff/Flare Pre-load Checks.

3.1. Chaff/flare mission requirements will be identified in the weekly flying schedule using the appropriate configuration code. Changes to the weekly flying schedule requiring additional chaff and flare support will require coordination using the AF Form 2407, *Weekly/Daily Flying Schedule Coordination*.

3.2. The 374 AMXS Production Superintendent will:

3.2.1. Contact the MOC, chaff/flare load team, and 374th Maintenance Squadron (374 MXS) Superintendent no later than 1600 hours on the day prior to the mission to confirm

the aircraft tail number, aircraft location, required chaff/flare payload requirements, and the required delivery time of loaded magazines to the aircraft.

3.2.2. Coordinate with the chaff/flare load team to start the chaff/flare pre-load checks prior to magazine delivery time.

3.2.3. Coordinate with the 374 MXS/MXMW to ensure magazines will be ready for delivery to the aircraft at the appropriate time.

3.3. The chaff/flare load team will notify the Production Superintendent when the pre-load checks are completed and the aircraft is ready to be loaded.

4. Procedures for Requesting, Transporting and Uploading/Downloading Chaff/Flare Modules.

4.1. Authorized upload/download parking locations: The Yokota AB flight line and all aircraft parking locations are authorized for uploading/downloading chaff/flare munitions provided that the quantity of munitions being loaded or unloaded is limited to a single aircraft load. Vehicles parked for loading/unloading of munitions are considered in transit.

4.2. Delivery times for chaff and flare loaded trailers will be coordinated between the chaff/flare load team, Production Superintendent and 374 MXS Superintendent to assess the risks and hazards associated with seasonal weather patterns when determining chaff and flare delivery times.

4.3. Aircraft should normally be refueled before uploading/downloading munitions. Aircraft refueling is authorized after loaded magazines are installed in aircraft.

4.4. Explosives will be transported and protected IAW AFMAN 91-201 and AFI 24-301, *Vehicle Operations*.

4.5. Drivers of vehicles that handle or transport explosives must be trained using a lesson plan certified by 374 AW/SEW.

4.6. At the Production Superintendent's request, the MOC will contact 374 MXS Superintendent and request delivery/pickup of chaff/flare magazines to/from the aircraft.

4.7. The 374 MXS/MXMW will contact the MOC when explosives transportation is started and completed.

4.8. The load team will notify the MOC when explosive loading operations are started and completed.

4.9. The MOC will notify Base Operations and 374 CES/CEF when explosives transport is started/completed.

4.10. The MOC must also ensure 374 CES/CEF is made aware of the location of explosives awaiting upload/pickup, upload/download operations, explosives-loaded aircraft on the flight line, and explosives-loaded aircraft that have departed the flight line.

4.11. The chaff/flare load team, which will consist of a minimum of two qualified technicians, will "secure" the immediate area with an explosives operation sign, and either the 12" or 24" fire symbol sign posted at the nose of the aircraft as a minimum and will remain vigilant throughout upload/download operations to ensure nonessential personnel do not come within 50 feet of explosives upload/download operations.

4.11.1. Personnel Limits: One supervisor, two workers and one casual observer.

4.11.2. All personnel performing explosives operations must be currently trained on handling explosives IAW AFI 91-202, *The US Air Force Mishap Prevention Program*.

4.12. The following will not be conducted within 100 feet of munitions uploading/downloading operations: Refueling/defueling, liquid oxygen servicing, aircraft radio operations or engine runs. The loading team supervisor will provide a safety briefing before munitions delivery is accomplished. As a minimum, it will contain:

4.12.1. Fire fighting procedures.

4.12.2. Designated evacuation location and procedures.

4.12.3. Steps to take for dropped or damaged explosives.

4.12.4. Withdrawal distances.

4.12.5. Any specific safety requirements for the explosives being handled.

4.12.6. Direction/briefing to remove watches, rings and all other jewelry.

4.12.7. Task assignment/responsibilities of load team members:

4.12.7.1. Crew member #1 is the load crew supervisor. The load crew supervisor will:

4.12.7.1.1. Ensure applicable operational checks are current.

4.12.7.1.2. Ensure stray voltage is accomplished prior to loading.

4.12.7.1.3. Ensure safety standards are enforced.

4.12.7.1.4. Ensure proper documentation is accomplished.

4.12.7.1.5. Will torque chaff/flare modules in place.

4.12.7.2. Crew member #2 is primarily responsible for handling munitions, inserting/removing modules in/out of dispensers and holding them in place while crew member #1 torques them in place.

4.12.7.3. To minimize contact with munitions, crew member #1 will perform installation and removal of modules in the left and right pylons as well as torquing modules in place.

4.13. The following safety precautions will be strictly adhered to:

4.13.1. Personnel must ground themselves before handling electrically primed explosives. Frequently re-accomplish this procedure during the uploading/downloading operations.

4.13.2. The wear of static-producing clothing such as 100% nylon, rayon, wool or polyester is prohibited as an outer garment. Personnel will not put on or remove garments while engaged in explosives operations. Gortex garments may be worn during uploading/downloading operations.

4.13.3. Explosives must never be carried in pockets, CTKs or tool pouches.

4.13.4. Personnel should avoid pointing electrically primed explosives toward themselves, others, vehicles or aircraft.

4.13.5. Do not tumble, drag, throw or roll explosives or containers.

4.13.6. Disassembly of any magazines is prohibited.

4.13.7. No radio frequency transmissions of any kind, including cellular phones, will be made within 25 feet of the immediate area of explosives.

4.13.8. Ensure adequate area lighting when uploading/downloading explosives during hours of dusk/darkness.

4.13.9. Discontinue all explosives uploading/downloading operations when lightning is within 5 nautical miles and/or winds exceed 35 knots.

4.13.10. Do not remove explosives lot number or date of installation markings on the side of loaded magazines.

4.14. Refer to TO 1C-130A-33-1-2, *Organization Maintenance -- Nonnuclear Munitions Loading Procedures, AN/ALE-40(V) Countermeasures Dispensing Set, C-130e and C-130h Aircraft*, or TO 1C-130A-33-1-2CL-9, *Organization Maintenance Checklist -- Nonnuclear Munition Loading Procedures, An/Ale-40(V)*, for specific step-by-step uploading/downloading procedures.

4.15. The chaff/flare load team will notify MOC when the upload/download is started and give the greatest fire symbol posted.

4.16. The MOC will notify Base Operations, 374 CES/CEF and 374 SFS when upload/download is started and give the greatest fire symbol posted. The MOC will notify all flight line personnel of munitions upload/download operations, identifying aircraft parking location and tail number/aircraft call-sign or generation line number (contingencies).

4.17. The aircraft armament placard and an AFTO Form 781A, *Maintenance Discrepancy and Work Document*, "Info-Note" will be used to annotate the type and quantity of munitions loaded on the aircraft.

4.18. The chaff/flare load team will notify MOC when upload/download is complete.

4.19. The MOC will notify Base Operations, the 374 CES/CEF and 374 SFS when upload/download is complete.

4.20. The Maintenance Expediter will notify the MOC when loaded aircraft depart/arrive parking spot.

4.21. The MOC will notify Base Operations and the 374 CES/CEF of explosives-loaded aircraft arrival to or departure from parking spot.

5. Maintenance Precautions on Explosives-Loaded Aircraft.

5.1. Aircraft are considered explosives-loaded when chaff or flares are loaded in any part of the weapon system or being transported as cargo, and will be handled IAW TO 11A-1-33, *Handling and Maintenance of Explosives Loaded Aircraft - (ATOS)*, and AFMAN 91-201.

5.2. Vehicles not directly involved with the explosives uploading/downloading operation will remain at least 50 feet from explosives.

- 5.3. Hanging of chaff/flare loaded aircraft is prohibited IAW TO 11A-1-33.
- 5.4. Jacking and other maintenance that will affect aircraft "Weight on Wheels" switch configuration is prohibited (aircraft must be downloaded).
- 5.5. Functional Check Flights (FCF) with explosives are performed only if the explosives are vital to the FCF.
- 5.6. Maintenance that requires electrical power to the ADS equipment will not be performed until the systems are "safed" by a qualified technician.
- 5.7. Maintenance that will increase the probability of fire, explosives release, etc., will not be performed. All maintenance actions on munitions loaded aircraft will be coordinated through the Production Superintendent.
- 5.8. If an unknown/hazardous condition is encountered, cease all maintenance, evacuate personnel to the applicable safe distance and notify the MOC.

6. Procedures for Recovering and Downloading Explosives-Loaded Aircraft.

- 6.1. When an explosives-loaded aircraft is inbound, the MOC will notify the 374 AMXS Production Office. If a munitions download is required, MOC will notify 374 MXS Superintendent. In addition, if the system was armed during flight, the MOC will coordinate with 374 AW Command Post (374 AW/CP) to ensure the aircraft is inspected for partially ejected flares prior to proceeding to normal parking.
- 6.2. After landing, the aircraft will proceed to the "hammerhead" for end of runway inspections by aircrew for partially ejected flares. If no partially ejected flares are found, the aircraft may proceed to normal parking.
- 6.3. If an uncommanded release of munitions occurs:
 - 6.3.1. Aircrew will perform all applicable partially ejected flare checks at the hammerhead.
 - 6.3.2. If no partially ejected flare is discovered, the aircraft will taxi to normal parking when cleared to do so.
 - 6.3.3. Upon arrival at the parking spot, the aircraft will be impounded IAW AFI 21-101 and 374 MXG OI 21-103, *Aircraft/Equipment Impoundment Procedures*, and a thorough investigation will be performed by qualified Electronic Countermeasures Technicians.
- 6.4. If a partially ejected flare or unknown condition exists:
 - 6.4.1. Aircrew will notify the 374 AW/CP. The 374 AW/CP will notify the 374 AW/SE, the 374 CES/CEF and the 374 MOS/MOC to respond to the aircraft. The 374 AW/CP will notify Yokosuka EOD.
 - 6.4.2. Engines will be shut down immediately and aircraft will be chocked.
 - 6.4.3. Aircrew personnel will recheck that the ADS system is SAFE.
 - 6.4.4. Aircrew and all nonessential personnel will evacuate to a minimum safe distance of 600 feet or as directed by the on scene commander.

6.5. Normal operations require chaff/flare downloading after flight. When the aircraft will fly subsequent missions requiring chaff/flares, the Production Superintendent will determine if downloading is required.

6.5.1. Load crews will coordinate with the 36th Airlift Squadron (36 AS)/Tactics to determine the maximum expenditures allowed before reconciliation of chaff/flares is required.

6.6. If downloading is required, the chaff/flare load team will repeat steps in paragraph 4 of this instruction after the aircraft is recovered at normal parking.

6.6.1. The chaff/flare load team will annotate AF Form 2434, *Munitions Configuration and Expenditure Document*, with expenditures and provide a copy to 374 MXS/MXMW.

6.6.2. The 374 MXS/MXMW personnel will account for all downloaded modules prior to departure from the flight line. Discrepancies in reconciliation will be corrected prior to full acceptance of modules by 374 MXS/MXMW. Full counts must match the AF Form 2434.

6.7. Squib/Flare Misfire procedure:

6.7.1. The flight crew or chaff/flare load team will annotate the remarks block of the AF Form 2434 if there are any misfires detected. When misfires are detected, chaff/flare load team personnel will attach the AF Form 2434 detailing which magazine number and which sequence number stick(s) misfired.

6.7.2. The 374 MXS MXMW personnel will inspect squib/flare misfires and take appropriate actions deemed necessary by the 374 MXS/MXMW Chief and applicable TOs.

7. Documentation Procedures:

7.1. AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance*: Document the AFTO Form 781H, IAW TO 00-20-1-WA-1, *Web Access - Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*.

7.2. AFTO Form 781A:

7.2.1. Enter the following in the 781A, IAW TO 00-20-1-WA-1:

7.2.1.1. Specific quantity and type of munitions loaded as well as specific dispensers loaded if full load is not accomplished (e.g., "Info Note: 120 M-206 Flares loaded in nose dispensers only, carry forward until downloaded" or "Info Note: 240 M-206, 240 M-211, 60 RR-170 Chaff loaded, carry forward until downloaded.")

7.2.2. Enter the appropriate Red symbol/discrepancy in AFTO Form 781A, IAW TO 00-20-1-WA-1.

7.2.3. "Munitions upload/download required, IAW TO 1C-130A-33-1-2CL-9."

7.3. The Munitions load chief will clear the discrepancy after munitions upload/download is complete.

7.4. AF Form 2434:

7.4.1. The following blocks will be annotated with applicable information when the aircraft is loaded with munitions:

7.4.1.1. "Page x of y"

7.4.1.2. "Unit"

7.4.1.3. Enter aircraft tail number in Column 1, "ACFT SERIAL NO."

7.4.1.4. Enter MSCL configuration code in Column 2, "CONFIGURATION CODE."

7.4.1.5. Enter dispenser loaded in Column 3, "ACFT STA."

7.4.1.6. Enter module serial number (i.e., Y301) in Column 4, "LAUNCHER / RACK / SSU S/N."

7.4.1.7. Enter the specific module quantity of munitions loaded in Column 5, "MUNITIONS, QTY LOADED."

7.4.1.8. Enter the specific type of munitions loaded in Column 6, "MUNITIONS, TYPE", (e.g., M-206).

7.4.1.9. Enter the specific module quantity of installed impulse cartridges in Column 11, "IMPULSE CARTS, QTY INST."

7.4.1.10. Enter the type of impulse cartridges installed in Column 12, "IMPULSE CARTS, TYPE."

7.4.2. The following blocks will be annotated with applicable information when munitions are downloaded from the aircraft:

7.4.2.1. Enter the specific quantity of munitions expended from applicable modules in Column 7, "MUNITIONS, QTY EXPENDED."

7.4.2.2. Enter the specific quantity of impulse cartridges expended from applicable modules in Column 13, "IMPULSE CARTS, QTY EXP."

7.4.2.3. Enter any chaff/flare misfire information in Column 17, "REMARKS."

7.4.2.4. Enter the date the munitions were downloaded in "DATE" block.

7.4.3. Crew member #1 will sign the AF Form 2434 and fax it to the 374 MXS/MXMW.

8. Training Requirements and Documentation:

8.1. Chaff/flare load team members will accomplish the following training:

8.1.1. Explosives Safety IAW AFMAN 91-201.

8.1.2. C-130 Munitions Loading Academic training from a qualified WTQC/WTQM.

8.1.3. C-130 Munitions Loading Practical training from a qualified WTQC/WTQM.

8.2. Load Team Chief (1-man) Prerequisites: 6 months as load team member (2-man) and be at least a 5-level ECM technician or a 7-level Crew Chief.

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Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 21-101, *Aircraft and Equipment Maintenance Management*, Chapter 13, *Mobility Aircraft Defensive System Loading Policy*, 26 July 2010

AFI 24-301, *Vehicle Operations*, 1 November 2008

AFI 31-101, *Integrated Defense (FOUO)*, 8 October 2009

AFMAN 91-201, *Explosives Safety Standards*, 12 January 2011

AFI 91-202, *The US Air Force Mishap Prevention Program*, 5 August 2011

Department of Defense Directive (DODD) 6055.9E, *Explosives Safety Management and the DoD Explosives Safety Board*, 19 August 2005.

T.O. 00-20-1-WA-1, *Web Access - Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*, 15 June 2011

T.O. 1C-130A-33-1-2CL-9, *Organization Maintenance Checklist -- Nonnuclear Munition Loading Procedures, An/Ale-40(V)*, 15 June 2011

T.O. 11A-1-33, *Handling and Maintenance of Explosives Loaded Aircraft - (ATOS)*, 28 January 2010

T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding (ATOS)*, 21 October 2011

T.O. 1C-130A-33-1-2, *Organization Maintenance -- Nonnuclear Munitions Loading Procedures, AN/ALE-40(V) Countermeasures Dispensing Set, C-130e and C-130h Aircraft*, 15 February 2010

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*, 22 September 2009

AF Form 2407, *Weekly /Daily Flying Schedule Coordination*, 1 June 1972

AF Form 2434, *Munitions Configuration and Expenditure Document*, 1 December 1996

AFTO Form 781A, *Maintenance Discrepancy and Work Document*, 8 January 2008

AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance*, 15 September 2010

Abbreviations and Acronyms

ADS—Aircraft Defensive Systems

FCF—Functional Check Flights

IAW—in accordance with

MOC—Maintenance Operations Center

OPR—Office of Primary Responsibility

RDS—Records Disposition Schedule